

What is claimed is:

a  
1. A starter for an internal combustion engine including a planetary gear speed reduction mechanism, a pinion to be engaged with a ring gear of said engine and a pinion drive shaft connected to said speed reduction mechanism comprising:

a motor having a motor housing with a first outside diameter and a motor shaft;

DECEMBER 1959  
a front housing having a flange for supporting said pinion drive shaft, said flange having a bearing for supporting said pinion drive shaft at an end of said shaft and a plurality of fastening holes disposed at a circumference having second diameter through which a plurality of fastening bolts is fixed to a portion of said internal combustion engine; and

a center casing having approximately the same outside diameter as said motor housing and a bearing for supporting said pinion drive shaft at the other end, said center housing being disposed between said motor housing and said front housing for aligning said motor shaft, said planetary gear speed reduction mechanism and said pinion drive shaft,; wherein

a difference between said first diameter and said second diameter is larger than a maximum outside diameter of said fastening bolt so that said fastening bolt can be inserted into said fastening hole along outer peripheries of said motor housing.

2!  
Don't

2. The starter as claimed in claim 1, wherein said difference is larger than a maximum outside diameter of a socket wrench.

3. The starter as claimed in claim 2, further comprising an end frame having a plurality of radially projecting fixing portions disposed away from said fastening holes so as not to obstruct said socket wrench.

4. The starter as claimed in claim 1, wherein said first outside diameter of said motor housing is between 100 mm and 118 mm, and

said planetary gear speed reduction mechanism has a speed reduction ratio between 3.8 and 4.4.

5. The starter further comprising a dust seal disposed between said front housing and said center housing.

add  
as